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PROCESS PATENTS INVOLVING PRINCIPLES OF NATURE

While every process invention, and indeed every invention of a machine or of a product, implies certain physical or chemical properties of matter, there are some process claims from out of which the underlying natural principle projects like a granite ledge outcropping through a scanty soil. To those who are about to align themselves in assault upon or in defense of such a patent, the outcome of the litigation seems more than usually difficult to forecast. The text-books give inadequate clues to the guiding legal principles. And this confusion exists notwithstanding that the opinions in the two greatest patent cases in our judicial history, relative to the inventions of Morse and of Bell, construed with great care, claims of this character; and that the doctrines there enunciated were in accord with former adjudications and have ever since been consistently applied.

Before embarking upon the general discussion, it is well to recall precisely what is meant by a process, under our statutes, as defined by the authorities. "A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as a piece of machinery. In the language of the patent law, it is an art. The machinery pointed out as suitable to perform the process may or may not be new or patentable; whilst the process may be altogether new, and produce an entirely new result. The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence."¹ A new process is usually the result of discovery; a machine, of invention. The arts of tanning, dyeing, making water-proof cloth, vulcanizing India rubber, melting ores, and numerous others, are usually carried on by processes, as distinguished from machines. One may discover a new and useful improvement in the process of tanning, dyeing,

¹ *Cochrane v. Decner*, 94 U. S., 780, 788.

etc., irrespective of any particular form of machinery or mechanical device.”² In theory a process may be entirely manual.³ On the other hand, “a valid patent cannot be obtained for a process which involves nothing more than the operation of a piece of mechanism, that is to say, for the function of a machine.”⁴ But “a process or method of a mechanical nature, not absolutely dependent upon a machine, although perhaps best illustrated by mechanism, may, if new and useful, be the proper subject of a patent, even though it involves no chemical or other elemental action.”⁵

Coming now to the main proposition, it is believed that where the utility of a process, claimed as new, distinctively depends on the natural characteristics of materials or substances used in the process, there are three classes of circumstances where there can be a valid process patent.

First Class: *Where in conjunction with a discovery that some principle of nature is available for a certain purpose, apparatus is devised for utilizing the principle. The inventor can describe his process and the apparatus, whereby it can be performed, and then claim the process.*

“All machines may be regarded as merely devices, by the instrumentality of which the laws of nature are made applicable and operative to the production of a particular result. He who first discovers that a law of nature can be so applied, and having devised machinery to make it operative, introduces it in a practical form to the knowledge of his fellow men, is a discoverer and inventor of the highest grade, not merely of the mechanism—the combination of iron, brass, and wood, in the form of levers, screws or pulleys—but the force which operates through the mechanical medium—the principle, or, to use the synonym given for this term in the Act of 1793, the character of the machine. And this title as a discoverer he may lawfully assert, and secure to himself by letters patent, thus establishing property, not only in the formal device for which mechanical ingenuity can at once, as soon as the principle is known, imagine a thousand substitutes,

² *Corning v. Burden*, 15 How., 252, 267, 268.

³ *Carnegie Steel Co. v. Cambria Iron Co.*, 185 U. S., 425.

⁴ *Risdon Locomotive Works v. Medart*, 158 U. S., 68; *In re Cunningham*, 21 App., D. C. 29.

⁵ *In re Weston*, 17 App., D. C. 431; *Westinghouse v. Boyden Power Brake Co.*, 170 U. S., 537, 557.

some as good, others better, perhaps all dissimilar, yet all illustrative of the same principle, and depending on it—but in the essential principle which his machine was the first to embody, to exemplify, to make operative and to announce to mankind.”⁶

In *Le Roy v. Tatham*, 14 How., 156, 175 (1852), Mr. Justice McLean, speaking for the majority of the court, after stating that a newly discovered principle applied to useful purposes is patentable, said: “In all such cases, the processes used to extract, modify, and concentrate the natural agencies, constitute the invention. The elements of the power exist; the invention is not in discovering them, but in applying them to useful objects. Whether the machinery used be novel, or consist of a new combination of parts shown, the right of the inventor is secured against all who use the same mechanical power, or one that shall be substantially the same. * * * A new property discovered in matter, when practically applied, in the construction of a useful article of commerce or manufacture, is patentable; but the process through which the new property is developed and applied, must be stated, with such precision as to enable an ordinary mechanic to construct and apply the necessary process.”

Referring to Neilson's patent litigated in the English case of *Neilson v. Thompson*, Chief Justice Taney said: “It seems that the court at first doubted whether it was a patent for anything more than the discovery that hot air would promote the ignition of fuel better than cold, and if this had been the construction, the court, it appears would have held his patent to be void; because the discovery of a principle in natural philosophy or physical science is not patentable. But after much consideration, it was finally decided that this principle must be regarded as well known, and that the plaintiff had invented a mechanical means of applying it to furnaces; and that his invention consisted in interposing a heated receptacle between the blower and the furnace, and by this means heating the air after it left the blower, and before it was thrown into the fire.”⁷

“Now, percussion, reaction, and centrifugal force are, in the abstract, neither new principles nor subjects of a patent. But

⁶ Judge Kane charging the jury in *Parker v. Hulme*, Fed. Cas. 10,740; 1 Fish., Pat. Cas. 44 (C. C. 1849). See also *Foot v. Silsby*, Fed. Cas. 4,916; 1 Blatchf., 445 (C. C. 1849).

⁷ *O'Reilly v. Morse*, 15 How., 62, 116 (1853). As to the Neilson patent, also see *Tilghman v. Proctor*, 102 U. S., 707, 724 (1880); and *Risdon Locomotive Works v. Medart*, 158 U. S., 72, 73, 74 (1894).

their embodiment and application to machinery may be both new and useful, and entitle the discoverer to the exclusive use of his invention. * * * And here lies the secret of this 'Parker Wheel.' It is the vortical motion of the water on the wheel, which operates as a coefficient to the reactive power of the water on the buckets. It is what the patentees claim it to be, to wit: 'An improvement in the application of hydraulic power, by a method of combining percussion with reaction.'"⁸

In the *Telephone Cases*, 126 U. S., 1 (1888), as summarized in the syllabus, it appeared from proof that "Bell was the first discoverer of the art or process of transferring to, or impressing upon, a continuous current of electricity in a closed circuit, by gradually changing its intensity, the vibrations of air produced by the human voice in articulate speech, in a way to cause the speech to be carried to and received by a listener at a distance on the line of the current;" that he had described in the specification "his invention with sufficient clearness and precision to enable those skilled in the matter to understand what his process" was and had pointed out a "practicable way of putting it into operation;" that the fifth claim under his patent, No. 174,465, was "not confined to the magneto instrument, or to such modes of creating electrical undulations as could be produced by that form of apparatus;" and that this claim "also covered his invention of an apparatus to make useful his discovery of an art or process for electrical transmission of speech." This claim, on page 13 reads: "5. The method of, and apparatus for, transmitting vocal or other sounds telegraphically, as herein described, by causing electrical undulations, similar in form to the vibrations of the air accompanying the said vocal or other sounds, substantially as set forth." In the opinion of the court by Chief Justice Waite, at pages 532 and 533, he said: "Bell discovered that it [the reproducing of speech] would be done by gradually changing the intensity of a continuous electric current, so as to make it correspond exactly to the changes in the density of the air caused by the sound of the voice. This was his art. He then devised a way in which these changes of intensity could be made and speech actually transmitted. Thus his art was put in a condition for practical use. In doing this, both discovery and invention, in the popular sense of those terms, were involved—discovery in finding the

⁸ Judge Willson charging the jury in *Wintermute v. Redington*, Fed. Cas. 17,896; 1 Fish. Pat. Cas. 239 (C. C. 1856).

art, and invention in devising the means of making it useful. For such discoveries and inventions the law has given the discoverer and inventor the right to a patent—as discoverer, for the useful art, process, method of doing a thing he has found; and as inventor, for the means he has devised to make his discovery one of actual value. * * * The patent for the art does not necessarily involve a patent for the particular means employed for using it. Indeed, the mention of any means, in the specification or descriptive portion of the patent, is only necessary to show that the art can be used.”

Second Class: *Where in a manufacturing process a substance, having certain physical or chemical properties, is utilized in making a product of a certain kind, and where it is discovered that, in substitution for that substance, a new substance, having certain physical or chemical properties, can be used in conjunction with the other instrumentalities of the process to make a new product, differing from the old product, not in quality or quantity merely, but in kind; the use of such new substance in conjunction with the remaining instrumentalities of the old process, if the idea of substitution is not obvious, constitutes a new and patentable process.*

In the well-known case of *Crane v. Price*, in which the English Court of Common Pleas upheld a patent for using anthracite instead of bituminous coal, with the hot blast in melting iron ore, the evidence, as Chief Justice Tindal remarked, proved beyond doubt that, in the result of the combination of the hot blast with anthracite, not only was the yield of the furnace more, and the expense of making the iron less, but the nature, properties and quality of the iron were better than under the former process by means of the combination of the hot air blast with bituminous coal.⁹ And the decision rests, as was pointed out by Chief Baron Pollock and Baron Parke in *Dobbs v. Penn*, 3 Exch., 427, 432, 433, and by Mr. Justice Bradley in *Hicks v. Kelsey*, 18 Wall., 670, above cited, upon the ground that a new metal or composition of matter was produced. * * * So in *Smith v. Goodyear Dental Vulcanite Co.*,¹⁰ in this court, as was observed by Mr. Justice Story, in delivering its judgment: “A new product was the result, differing from all that had preceded it, not merely in degree

⁹ 4 *Man. & Gr.* 580, 604; 5 Scott N. R. 338, 389; 1 Webster Pat. Cas. 393, 410.

¹⁰ 93 U. S. 486, 494. See also *Goodyear Dental Vulcanite Co. v. Davis*, 102 U. S., 222.

of usefulness and excellence, but differing in kind, having new uses and properties.”¹¹

In *Celluloid Mfg. Co. v. Frederick Crane Chemical Co.*, 36 Fed., 110, 112 (C. C. 1888), in an opinion by Mr. Justice Bradley, on demurrer to the bill, the court says: “The principal improvement consists in the employment of certain substances as solvents or converting agents of pyroxyline or nitro-cellulose, in manufacturing compounds of that substance. The principal solvent heretofore used has been camphor, or a solution of camphor in alcohol. * * * ‘It was the object of my experiments to find new *menstrua* which are in themselves such active solvents of pyroxyline as to render the use of camphor unnecessary, and I have succeeded to the extent hereinafter set forth. My new group of active liquid solvents or converting agents, comprises oil of spearmint, nitrate of methyl, butyric acid, valeric ether, benzoic ether,’ etc. (naming twenty-two different substances.) The specification then proceeds to give directions as to the quantity of these ingredients to be used, and the manner of using them, stating that they may be used in connection with each other, or with camphor or alcohol, or singly by themselves. * * * It is true that the mere discovery of the qualities possessed by these substances is not patentable; in other words, the qualities themselves cannot be patented. But the patent in question is not granted for the discovery, nor for the solvent quality of the substances; it is granted for the ‘use’ of the substances ‘in the art of manufacturing compounds of pyroxyline, substantially as described,’ that is, as described and pointed out in the specification. * * * And it would seem that the result of the process is a different substance from that produced when camphor is the solvent used. The specification, it is true, intimates and concedes that certain parts of the process were well known; but exactly what was well known, and what was not, does not appear. No former patents are exhibited in the bill. Perhaps, by the answer of the defendants and proofs taken in the case, it may be made to appear that every part of the process, as a process, was known and used before, and that the only originality on the part of the patentee was the discovery of the fact that oil of spearmint and the other substances named are solvents of pyroxyline. Should this be so, the question would

¹¹ Mr. Justice Gray in *Penn. R. R. v. Locomotive Truck Co.*, 110 U. S., 490, 494, 495.

then be fairly presented whether the mere discovery of this fact was patentable."

In these decisions, there is also pointed out the close analogy existing between a patent for a process, using a new substance in a combination to make a new product, and a patent for a new composition of matter. As there is a tendency to limit, though not to deny, patentability in respect to such new compositions, it is reasonable to believe a like tendency exists as regards such processes. There are many recent decisions, holding certain combinations of materials, with a substitution of one new material therein, to be unpatentable.¹²

Third Class: *Where it is discovered that the result of an old process can be improved by the introduction or substitution of some substance, having certain physical or chemical properties, and by its utilization IN A NOVEL MANNER in conjunction with the other instrumentalities of the old process, SUCH NEW USE, if the idea is not obvious, also constitutes a new and patentable process.*

In *McClurg v. Kingsland*, 1 How., 202 (1843), it appeared that some method had long been sought by which rollers or cylinders could be so cast that the metal, when introduced into the mould be given a rotary motion, so as to throw the flog or dross into the center instead of the circumference of the casting. "By the old mode, the metal was conveyed from the furnace to the mould through a gate, or pipe, placed in a horizontal or perpendicular direction." Harley discovered a new method, which he explained in his specification as follows: "The tube or tubes, or passages called gates, through which the metal to be conveyed into the moulds shall not enter the mould perpendicularly at the bottom, but slanting, or in a direction approaching to a tangent of the cylinder, or if the gates enter the moulds horizontally or nearly so, shall not enter in the direction of the axis of the cylinder, but in a tangent from, or inclining towards a tangent of the cylinder." A claim covering this process of manufacture was upheld.¹³

In *Mowry v. Whitney*, 14 Wall., 620 (1871), the patent was for an improved method of casting car wheels, consisting: First,

¹² *Ex parte Grayson & Crecelius*, C. D. 1894, 100; *American Acetylene Burner Co. v. Kirchberger*, 142 Fed., 745 (C. C. A. 1905); *Hogan v. Westmoreland Specialty Co.*, 145 Fed., 199 (C. C. 1906); *Edison Electric Light Co. v. Novelty Incandescent Light Co.*, 161 Fed., 549 (C. C. 1908).

¹³ To the same effect are *Detmold v. Reeves*, Fed. Cas. 3,831; 1 Fish. Pat. Cas. 127 (C. C. 1851); and *Bell v. Daniels*, Fed. Cas. 1, 247; 1 Fish. Pat. Cas. 372 (C. C. 1858).

of taking the wheels from the moulds when partially cooled and before any straining of the parts could occur; second, of the placing them in a chamber of about the same temperature; third, of then reheating them almost to the point of fusion, and fourth, of then cooling them just fast enough for all parts to cool and shrink simultaneously. Said Mr. Justice Strong, at pages 642 and 643: "We have sought in vain through the proofs submitted in this case for any satisfactory evidence that this process was known before 1847, when Whitney commenced it, or that anything equivalent to that process was known. Certainly nothing of the kind had ever been applied to cast-iron railroad wheels, and, as we have seen, they are castings of a peculiar character, not admitting of the treatment that may be applied to other castings. What they needed was (what was substantially described by one of the witnesses), the discovery of the fact that the chilled cast-iron, constituting one part of the wheel, could be subjected to heat less than that which would cause fusion, without producing any material effect upon its hardness, while the cooling of other parts of the wheel could be so prolonged by applying heat externally, as to enable all parts to cool without being subjected to the strain attendant on unequal contraction, and in addition to the discovery, they needed the invention of a process by which it could be practically carried out. Such a discovery and such a process were needed for no other castings.

* * * The specification disclaims invention of annealing iron castings done in the ordinary mode. It claims annealing when applied to cast-iron railroad wheels, in the mode or by the process described. It is not, therefore, merely an old contrivance or process applied to a new object, a case of double use. A new and previously unknown result is obtained, namely, the relief of the plate of the wheels from inherent strains without impairing the chilled tread, a result which, though anxiously sought, had not been obtained before Whitney's invention."¹⁴

In *Cochrane v. Deener*, 94 U. S., 780, 786 (1876), Mr. Justice Bradley, in reference to an improved process for making flour, after quoting from the specification said: "His improvement, therefore, does not consist in using drafts or currents of air, but

¹⁴ See also the Circuit Court cases of *Roberts v. Dickey*, Fed. Cas. 11,899; 4 Fish. Pat. Cas. 532 (1871); *Roberts v. Schreiber*, 2 Fed. 855 (1880); *Cary v. Wolff*, 24 Fed. 139 (1885); *Cary v. Lovell Mfg. Co.*, 31 Fed. 344 (1887).

in the process as a whole, comprising the application of the blast, and the carrying off of the fine impurities, whereby the middlings are purified preparatory to re-grinding after being separated from the other parts."

In *Andrews v. Carman*, Fed. Cas. 371; 13 Blatchf., 307 (C. C. 1876), the claim was for "the process of constructing wells by driving or forcing an instrument into the ground until it is projected into the water, without removing the earth upwards, as it is in boring, substantially as herein described." Said Judge Benedict: "This process involves a new idea, which was put into practical use when the method was devised of fitting tightly in the earth, by the art of driving without removing the earth upwards, a tube open at both ends but otherwise air-tight, and extending down to a water-bearing stratum, to which is attached a pump, a vacuum in the well pit, and at the same time in the water-bearing stratum of the earth, being necessarily created by the operation of a pump attached to a pipe so driven. * * * Such an invention is without the field of mechanical contrivance. It consists in the new application of a power of nature, by which new application a new and useful result is attained. There is no new product, but an old product—water—is obtained from the earth in a new and advantageous manner. * * * The elements of the process may be old, but, when combined for the purpose of putting to practical use the new idea of forcing water in this way from the earth into a well pit, they constitute a new and useful process." The patentability of this invention was upheld for like reasons in various Circuit Court decisions cited in *Eames v. Andrews*, 122 U. S., 47; but the patent was ultimately held invalid on account of two years' public use before the filing of the application.

In *Tilghman v. Proctor*, 102 U. S. 707 (1880), reversing *Mitchell v. Tilghman*, 19 Wall. 287 (1873), the specification stated: "My invention consists of a process for producing free fat acids and solution from those fatty and oily bodies of animal and vegetable origin which contain glycerine as their base. For this purpose, I subject these fatty or oily bodies to the action of water at a high temperature and pressure, so as to cause the elements of those bodies to combine with water, and thereby obtain at the same time free fat acids and solution of glycerine. I mix the fatty body to be operated upon with from a third to a half of its bulk of water, and the mixture may be placed in any convenient

vessel in which it can be heated to the melting-point of lead, until the operation is complete. The vessel must be closed and of great strength, so that the requisite amount of pressure may be applied to prevent the conversion of the water into steam;" and then described an apparatus suitable for use in applying the process. The claim read: "Having now described the nature of my said invention, and the manner of performing the same, I hereby declare that I claim, as of my invention, the manufacturing of fat acids and glycerine from fatty bodies by the action of water at a high temperature and pressure." It appeared that before the invention of Tilghman, the patentee, there had been two other processes for effecting a decomposition of fats into their component elements, but that each process "was often accompanied by prejudicial effects from the access of atmospheric air to the contents of the still." In view of Tilghman's improved process, as further amplified by the proof, Mr. Justice Bradley, at pages 721 and 722, said: "He discovered that fat can be dissolved into its constituent elements by the use of water alone under a high degree of heat and pressure; and he patented *the process* of 'manufacturing fat acids and glycerine from fatty bodies by the action of water at a high temperature and pressure.' Had the process been known and used before, and not been Tilghman's invention, he could not have claimed anything more than the particular apparatus described in his patent; but being the inventor of the process, as we are satisfied was the fact, he was entitled to claim it in the manner he did." The patentee, therefore, applied to the fatty bodies: (1) water only; (2) in a closed vessel; (3) at a high temperature and pressure.¹⁵

In *Fermentation Co. v. Maus*, 122 U. S., 413 (1887), the third claim, on page 423, was: "The process of preparing and preserving beer for the market, which consists in holding it under controllable pressure of carbonic acid gas from the beginning of the *krausen* stage until such time as it is transferred to kegs and bunge substantially as described." In the opinion, at pages 427 and 428, Mr. Justice Blatchford said: "We think that the method or art covered by the third claim of the patent is patentable as a process, irrespective of the apparatus or instrumentality for carrying it out. It is the performing of a series of acts upon the beer in the *krausen* stage, producing new and useful results in the art of making marketable beer. The process consists

¹⁵ See also *Hammerslag v. Scamoni*, 7 Fed., 584 (C. C. 1881).

not in merely applying an apparatus to the cask at some period of the *krausen* stage of the beer, but consists in this, that when the beer has been put into the casks, and the *krausen* beer is added to it, and the apparatus is applied at the beginning of the *krausen* stage, the beer will be kept under the control of carbonic acid gas until such time as it is fit to be transferred to the kegs for market, such pressure resulting in the complete and speedy clarification of the beer, although it is in a state of active fermentation in the closed shaving casks, with the incidental results of no loss of beer, and no fouling of the casks or cellar, and no danger to the health of the workmen. * * * There appears also to be a new principle of action involved in the invention of the patentees. The carbonic acid gas generated by the fermentation in the cask, instead of being allowed to continually ascend, as it does with an open bung-hole, keeping the liquid constantly in a turbid state and overflowing at the bung-hole, is made, as stated in the specification, to first accumulate in the space above the beer in the closed cask, until the pressure is such that the gas overcomes the density of the beer, and enters it again, and charges it up to the pressure at which the water column is set, thus creating an equilibrium between the rising bubbles of gas and the pressure above, so that gravity can act on the yeast and impurities, and carry them down so that they will remain with the shavings at the bottom. This is a new use, in the treatment of fermenting beer, of the carbonic acid gas which it generates, and a new method or process of hastening the clarifying and settling of the beer."

In *Carnegie Steel Co. v. Cambria Iron Co.*, 185 U. S., 403 (1902), the process, as summarized in the syllabus, "consisted [in the placing] of a large reservoir between the blast furnace and the converters, in which should always be maintained a large quantity of metal, which should be drawn off in small quantities at a time and replenished by a like quantity of metal from the blast furnaces." The claims, on page 409, were: "1. In the art of refining iron directly from smelting furnaces, the process of equalizing the chemical composition of the crude metal by thoroughly commingling or mixing together the liquid metal charge and subsequently refining the mixed and equalized charge, substantially as and for the purposes described. 2. In the art of mixing molten metal to secure uniformity of the same in its constituent parts preparatory to further treatment, the process of in-

roducing into a mixing receptacle successive portions of molten metal ununiform in their non-metallic constituents (sulphur, silicon, etc.), removing portions only of the composite molten contents of the receptacle without entirely draining or emptying the same, and successively replenishing the receptacle with fresh ununiform additions, substantially as and for the purposes described." On pages 413-417 are stated the disadvantages of the old Bessemer process for making steel and how the process of Jones, the patentee, was a most decided improvement on the former process. "To enable the Jones process to be successfully carried out it is necessary (1) that the intermediate reservoir or mixer should be of large size, 'say 100 tons' capacity; (2) that it be covered to prevent the access of cold air from without; (3) that it be provided with a stop, so that it may not be tilted so far as to be emptied of its contents; (4) that a quantity of molten metal so large as to absorb all the variations of the product of the blast furnace received into it and thus to unify the metals discharged into the converters, be constantly retained in it." (At page 425.) Said Mr. Justice Brown, at page 429, delivering the opinion of the court upholding the patent: "It is true the Jones patent is a simple one, and in the light of present experience it seems strange that none of the expert steel makers, who approach so near the consummation of their desires, should have failed to take the final step which was needed to convert their experiments into an assured success."¹⁶

These three classes of cases mark the limits of restrictive ownership in processes—like three headlands they put out into the free seas of the principles of nature, where every man can sail his craft according to his own pleasure. In the previous decisions, the line of demarcation has been viewed from the landward side, as it were; its aspect will now be considered from the vision point of free privileges for all. Possibly a fairly accurate generalization of the authorities, finally to be collated, is this: *Using machinery or apparatus, previously employed in a given process, one cannot patentably introduce in the process, in place of an old material or substance, having at a given step in the process a certain physical or chemical effect in producing the result of the process, some new material or substance, the effect of which is simply to improve the result in quality or quantity.*

¹⁶ See also *United States Mitis Co. v. Midvale Steel Co.*, 135 Fed., 103 (C. C. 1904).

In *Wyeth v. Stone*, Fed. Cas. 18,107; 1 Story, 273 (C. C. 1840), the claim stated: "It is claimed as new, to cut ice of a uniform size, by means of an apparatus worked by any other power than human. The invention of this art, as well as of the particular method of the application of the principle, is claimed by the subscriber." Said Mr. Justice Story: "It is plain, then, that here the patentee claims an exclusive title to the art of cutting ice by means of any power, other than human power. Such a claim is utterly unmaintainable in point of law. It is a claim for an art or principle in the abstract, and not for any particular method or machinery, by which ice is to be cut. No man can have a right to cut ice by all means or methods, or by all or any sort of apparatus, although he is not the inventor of any or all such means, methods, or apparatus."¹⁷

In the opinion in *Le Roy v. Tatham*, 14 How., 156, 175 (1852), already quoted, Mr. Justice McLean also said: "Nor can an exclusive right exist to a new power, should one be discovered in addition to those already known. Through the agency of machinery a new steam power may be said to have been generated. But no one can appropriate this power to himself, under the patent laws. The same may be said of electricity, and of any other power in nature, which is alike open to all, and may be applied to useful purposes by the aid of machinery. A patent is not good for an effect, or the result of a certain process, as that would prohibit all other persons from making the same thing by any means whatsoever. This, by creating monopolies, would discourage arts and manufactures, against the avowed policy of the patent laws."

In *O'Reilly v. Morse*, 15 How., 62 (1853), one question was as to the validity of the eighth claim in the Morse patent of 1848, covering his invention of the electric telegraph. From the specification, given on pages 83-95, it appears that Morse fully described his discovery and also apparatus for its practical application. Then he claimed: "Eighth. I do not propose to limit myself to the specific machinery, or parts of machinery, described in the foregoing specifications and claims; the essence of my invention being the use of the motive power of the electric or gal-

¹⁷ Also see *Smith v. Ely*, Fed. Cas. 13,043; 5 McLean, 76 (C. C. 1849).

vanic current, which I call electro-magnetism, however developed, for making or printing intelligible characters, letters, or signs, at any distance, being a new application of that power, of which I claim to be the first inventor or discoverer." Said Chief Justice Taney, at pages 112-120: "It is impossible to misunderstand the extent of this claim. He claims the exclusive right to every improvement where the motive power is the electric or galvanic current, and the result is the marking or printing intelligible characters, signs, or letters at a distance. If this claim can be maintained, it matters not by what process or machinery the result is accomplished. For aught that we know some future inventor, in the onward march of science, may discover a mode of writing or printing at a distance by means of the electric or galvanic current, without using any part of the process or combination set forth in the plaintiff's specification. * * * Nor is this all, while he shuts the door against inventions of other persons, the patentee would be able to avail himself of new discoveries in the properties and powers of electro-magnetism which scientific men might bring to light. For he says he does not confine his claim to the machinery or parts of machinery, which he specifies; but claims for himself a monopoly of its use, however developed, for the purpose of printing at a distance. * * * The court is of the opinion that the claim is too broad, and not warranted by law. No one, we suppose, will maintain that Fulton could have taken out a patent for his invention of propelling vessels by steam, describing the process and machinery he used, and claiming under it the exclusive right to use the motive power of steam, however developed, for the purpose of propelling vessels. * * * Neither could the man who first discovered that steam might, by a proper arrangement of machinery, be used as a motive power to grind corn or spin cotton, claim the right to the exclusive use of steam as a motive power for the purpose of producing such effects. Again, the use of steam power in printing presses is comparatively a modern discovery. Was the first inventor of a machine or process of this kind entitled to a patent, giving him the exclusive right to use steam as a motive power, however developed, for the purpose of marking or printing intelligible characters? * * * The speci-

fication of this patentee describes his invention or discovery, and the manner and process of constructing and using it; and his patent, like inventions in the other arts above mentioned, covers nothing more. * * * Indeed, if the eighth claim of the patentee can be maintained, there was no necessity for any specification, further than to say that he had discovered that, by using the motive power of electro-magnetism, he could print intelligible characters at any distance. We presume it will be admitted on all hands, that no patent could have issued on such a specification. Yet this claim can derive no aid from the specification filed. It is outside of it, and the patentee claims beyond it."

A comparison between the *Telephone Cases* and *O'Reilly v. Morse* is highly instructive. In each specification the discovery of a new principle and details of apparatus for its application were described. Here the resemblance ceases. Bell made the claim for his telephonic process dependent, even in terms, upon his specification. Perhaps he was unnecessarily particular. For it is well settled that a claim is to be interpreted in the light of the specification even without the incorporation of the words "substantially as described," or the like. On the other hand, Morse, after having built, by his specification, the foundation for a strong process claim, deliberately destroyed, as it were, that foundation by claiming the use of the electric current for making or printing intelligible characters, letters or signs at any distance in entire independence of all apparatus. The scope of this article does not include a discussion as to what constitutes the infringement of a valid process claim. Suffice it to say that many authorities, some of which have been here cited, establish the proposition that a properly expressed process claim is infringed by the use of the process, even though the apparatus employed is different. But a process is a *method* for accomplishing a *result*. And there can be no infringement in accomplishing the same result by some other method. Hence a process claim cannot be for the result or function of the process. The difficulty with the Morse claim was its functional character. If that claim had been allowable, it might have been possible to quite monopolize the transmission and receipt of intelligible signs at a distance. Such a claim would have dominated the art of wireless telegraphy. Indeed, it almost seems, in reading some parts

of his great opinion, as if Chief Justice Taney, with prophetic vision, had foreseen the invention of Marconi.

In *Morton v. New York Eye Infirmary*, Fed. Cas. 9, 865, 5 Blatchf., 116 (C. C. 1862), the patentees had discovered that the inhalation of ether, a well known compound, produced insensibility to pain and had secured a patent for the process of administering ether in conjunction with the performance of surgical operations, the apparatus used for administering the ether being fully described in the specification, but being admittedly old. In adjudging the claim void, Judge Shipman said: "It is only where the explorer has gone beyond the mere domain of discovery, and has laid hold of the new principle, force, or law, and connected it with some particular medium or mechanical contrivance by which, or through which, it acts on the material world, that he can secure the exclusive control of it under the patent laws. He then controls his discovery through the means by which he has brought it into practical action, or their equivalent, and only through them. It is then an invention, although it embraces a discovery. Sever the force or principle discovered from the means or mechanism through which he has brought it into the domain of invention, and it immediately falls out of that domain and eludes his grasp. It is then a naked discovery, and not an invention." Then, with reference to the facts presented, he continued: "The effect discovered was produced by old agents, operating by old means upon old subjects. The effect alone was new, and to that only can the term 'discovery' apply. That this mere discovery, however novel and important, is not patentable, needs neither argument nor authority to prove. At this point the patent breaks down; for the specification presents nothing new except the effect produced by well known agents, administered in well known ways on well known subjects. This new or additional effect is not produced by any new instrument by which the agent is administered, nor by any different application of it to the body of the patient. * * * It is nothing more, in the eye of the law, than the application of a well known agent, by well known means, to a new or more perfect use, which is not sufficient to support a patent."

In *Shaw & Wilcox Co. v. Lovejoy*, Fed. Cas. 12,727; 7 Blatchf., 232 (C. C. 1870), it was held that the new use of

chemicals in an old apparatus for recovering precious metals from waste metallic solutions was not patentable. After stating the facts in detail, Judge Blatchford said: "The specification states, that the vessel may be of any suitable material and of any suitable form or size; that in it may be suspended a bag containing any ingredient that will precipitate the metal, or such ingredient may be placed in the vessel in a loose state; that, after the precipitation takes place, the liquid may be drawn off through a suitable pipe arranged in a suitable part of the vessel, or it may be allowed to fill the vessel and run away over the top; that a filtering device may be used with the pipe, but can be dispensed with for the majority of solutions; and that the vessel may have a partition in it or not. The sum and substance of all this is, that the result is the thing claimed to be patented. The apparatus is nothing but a vessel to hold the liquid, and the process consists only in putting into the liquid in the vessel the proper chemicals to effect the precipitation of the valuable metal. That a suitable vessel of a suitable form and size must be used to contain the liquid, if the liquid is to be utilized is no new idea. To discover that a suitable precipitating ingredient will precipitate what it is capable of precipitating, is no invention. The claim is altogether vague and general. It is open to the objection stated in the case of *O'Reilly v. Morse*, 15 How., 62, 119, against the eighth claim of Morse's telegraph patent. It is, in effect, a claim to the use of the proper chemicals to precipitate the metal from the liquid waste solution, by putting such chemicals into any proper vessel containing the solution."¹⁸

In some of the early cases, questions that have been here considered were presented in charges to the jury in actions at law for damages. Generally they have been presented at a full hearing upon the evidence in suits in equity. Sometimes the invalidity of a process claim has been so apparent that it has been determined on a demurrer to the bill. But this latter procedure, desirable as it is for securing a speedy adjudication, is only available in clear cases. In *Chinock v. Paterson, P. & S. Tel. Co.*, 112 Fed. Cas., 531 (C. C. A. 1902), a decision on demurrer by the

¹⁸ See also *Wall v. Leck*, 66 Fed., 552, (C. C. A. 1895); *American Strawboard Co. v. Elkhart Egg Case Co.*, 84 Fed., 960 (C. C. 1898); *Daylight Glass Mfg. Co. v. American Prismatic Light Co.*, 142 Fed. 454 (C. C. A. 1905); *Cameron Septic Tank Co. v. Village of Saratoga Springs*, 151 Fed., 242 (C. C. 1907).

Circuit Court, holding a process claim invalid, was reversed on the ground that the alleged invalidity was not so apparent as to permit of its being thus determined. As to the availability of such demurrers, reference may be had to the valuable article in the *Yale Law Journal*, Vol. V, page 213 (1895), entitled: *Determining the Validity of a Patent on Demurrer to a Bill in Equity*, by Mr. Samuel H. Fisher; and also to the note to *Caldwell v. Powell*, 19 C. C. A., 595 (1896).

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